

FIVE NEW SPECIES OF *XANTHINA* ALDRICH (DIPTERA:
DOLICHOPODIDAE) FROM MEXICO AND CENTRAL AMERICA

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Abstract.—Five new species of *Xanthina* are described from Mexico and Costa Rica, *X. squamifera*, *X. flagellifera*, *X. schildi*, *X. turrialbae*, and *X. attenuata*, showing various distinctive antennal or palpal forms. The large palpal scales of *X. squamifera* and the flagelliform palpal setae in *X. flagellifera* are particularly noted.

Key Words: *Xanthina*, new species, Dolichopodidae, Mexico, Costa Rica, palpi, ESEM

Xanthina Aldrich is an American genus credited in the Neotropical Catalogue (Robinson 1970) with four species, *X. flavus* (Aldrich) and *X. plumicauda* Aldrich from the Lesser Antilles, and *X. nigromaculata* Van Duzee and *X. subcurva* Van Duzee from Panama. Four species were described by Robinson (1975) from Dominica in the Lesser Antilles, *X. acuticornis*, *X. dominicensis*, *X. persetosa*, and *X. rubromarginata*. Another supposedly undescribed species was mentioned in Robinson (1975) from Puerto Rico, that has been reexamined and seems to be a minor variant of *X. persetosa*. At the time of the Dominica treatment, at least one additional remarkable species already was collected from Mexico, and representatives of four other Central American species, collected from the Turrialba area of Costa Rica in 1922 or ca. 1922 by Pablo Schild, had been sorted out of the Melander collections at the National Museum of Natural History, Smithsonian Institution (USNM). It is these Mexican and Central American species that are the topic of the present paper, especially the remarkable Mexican species with large scales on its palpi.

Like the more temperate *Achalcus* Loew,

Xanthina is distinctive in its yellowish color with mostly black bristles, and in having the scape of the antenna bare above, the posterior slope of the mesoscutum somewhat flattened, and the wings with the vein M usually scarcely deflected at the cross-vein dm-cu, and vein R₄₊₅ often becoming subparallel with M more distally. However, the femora of *Xanthina* lack true antero-dorsal preapical bristles. In the Catalogue, Robinson (1970) states, "The genus seems very close to *Achalcus* except for the lack of true preapical bristles on the femora. The palpi are often highly developed and ornate." The palpus character is especially true of some species described below, but it seems that the labella are also often interestingly modified. In one new species, *X. turrialbae*, modified labella occur in both sexes.

The new species with scales on the palpi, *Xanthina squamifera*, and a related new species with narrow trichomes on the palpi, *X. flagellifera*, share a distinctive short abdomen with the fifth tergite hiding the hypopygium. The two species have the first flagellomere deeply notched at the apex, unlike most *Xanthina*; a smaller less distinct notch is seen in one of the other new

species, *X. schildi*. Establishment of a new subgenus for the two most discordant species has been considered, but decided against at this time.

For illustration of the new species, the new Philips XL30 ESEM Scope of the National Museum of Natural History, that allows imaging without metallic coating, has been used. This has allowed highly detailed imaging that includes some substructure of the scales of *Xanthina squamifera*.

In the course of the study, material of two probable additional species has been seen, including one from North Carolina. Such material is too limited or too damaged for description at this time, however. The new species described here are based on limited material, each with only one male and often with no female. As a result, no effort has been made to dissect out hidden genital capsules, and some legs and wings were not available for description. Still, each of the species described below has at least one unquestionably distinctive feature by which the males, and in one case the females, can be easily identified.

***Xanthina squamifera* H. Robinson,
new species
(Fig. 1)**

Male.—Length 2.2 mm; wing 2.7 by 0.8 mm. Setae mostly black.

Eyes nearly contiguous at lower $\frac{1}{3}$ of face, facial triangles brown pollinose with pale reflections; front dark brown, scarcely dulled with sparse pollen. Palpus (Fig. 1B) narrowly ovate, acute, at midlength with numerous large stipitate white scales with dark bases, with flattened whitish setae nearer tips. Labella tonglike, pale yellow; long-acute at front, narrowed to apical peg. Antenna dark yellow, first flagellomere darker distally, oblong, with broad deep apical notch to $\frac{2}{3}$ of length (Fig. 1A), longer lobe below notch; arista from middle of notch.

Thorax yellow; 6 or 7 pairs of acrostichals; 6 pairs of distinct dorsocentrals.

Legs yellow. Fore coxa with pale hairs

anteriorly, with small black bristles along apical margin; femora not distorted, without highly modified setae; middle femur with slightly longer posteroventral hairs in distal $\frac{1}{3}$. Tibia II with anterodorsals near $\frac{1}{6}$, $\frac{1}{2}$, posterodorsal near $\frac{1}{6}$, 3 apicals; tibia III with anterodorsals near $\frac{1}{6}$, $\frac{1}{3}$, $\frac{2}{5}$, posterodorsals at $\frac{1}{6}$, $\frac{2}{5}$, $\frac{2}{3}$, ventrals at $\frac{2}{5}$, $\frac{1}{5}$, and 3 apicals. Lengths of tibiae and tarsomeres as follows: tibia I: 0.6 mm, tarsi: 0.47, 0.22, 0.16, 0.08, 0.08 mm; tibia II: 1.11 mm, tarsi: 0.36, 0.28, 0.19, 0.14, 0.11 mm; tibia III: 1.55 mm, tarsi: 0.22, 0.30, 0.25, 0.14, 0.11 mm.

Wing narrowly oval, slightly fuscous. Vein M scarcely bent at crossvein dm-cu; vein dm-cu nearly as long as CuA_1 ; tip of CuA_1 ending slightly before margin. Knob of haltere pale brownish.

Abdomen brown on tergites, yellow below. Tergites 1–5 exposed, with black bristles, longer near margins. Genital capsule mostly hidden in tergite 5, brown, rounded apex with small black bristles; cercus pale, small, ovate to subquadrate.

Female.—Unknown.

Holotype.—♂, Mexico: Oaxaca, above Valle Nacional, 16 May 1963, Robinson (USNM).

Remarks.—Males of *Xanthina squamifera* and the following species are unusual for the genus by the deep apical notch in each first flagellomere, the elaborated trichomes of each palpus, only five visible tergites of the abdomen, and the short cerci of their genital capsules. In neither case has any effort been made to dissect the genital capsules of the single males of each species. Perhaps more material will provide structural details that will justify a separate subgeneric status for the two species.

The present species has been noted by the author since the time of its collection because of the large scales on the palpi, but the description has awaited a fitting method of illustration. The new Philips XL30 ESEM Scope of the Museum has proven perfect, requiring neither coating with metal nor notable moistening of the specimens.

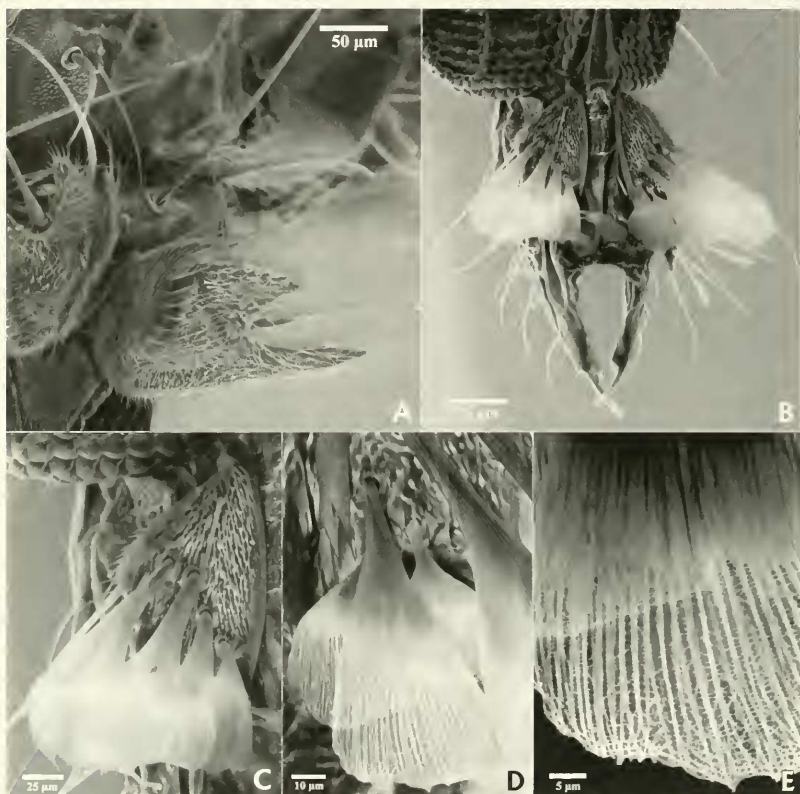


Fig. 1. *Xanthina squamifera*. A, First flagellomeres of antennae with deep apical sinuses. B, Frontal view of proboscis showing acute palpi with broad and narrow scales, and showing prolonged, tong-like tips of labella. C, Enlarged palpus with broad scales. D, Palpal scale showing some substructure. E, Edge of palpal scale with structural details.

Scales or scalelike structures occur in some other Dolichopodidae such as the Sciapodinae, along the costa of the wing or along tibiae or basitarsi. The scales of the present species, however, are the largest seen in the family (Figs. 1B–E). In the SEM scans the scales show some transparency, and high magnification shows some of the reticulate substructure. Such structure is slightly reminiscent of that in the scales of Lepidoptera, but it is not nearly as intricate. The flattened

bristles on the more distal parts of the palpi are evidently scales that are scarcely broadened. The labella of the proboscis also seem rather odd in their tonglike form and their peglike tips.

Xanthina flagellifera H. Robinson,
new species
(Fig. 2)

Male.—Length ca. 2 mm; wings broken near base. Setae mostly black.

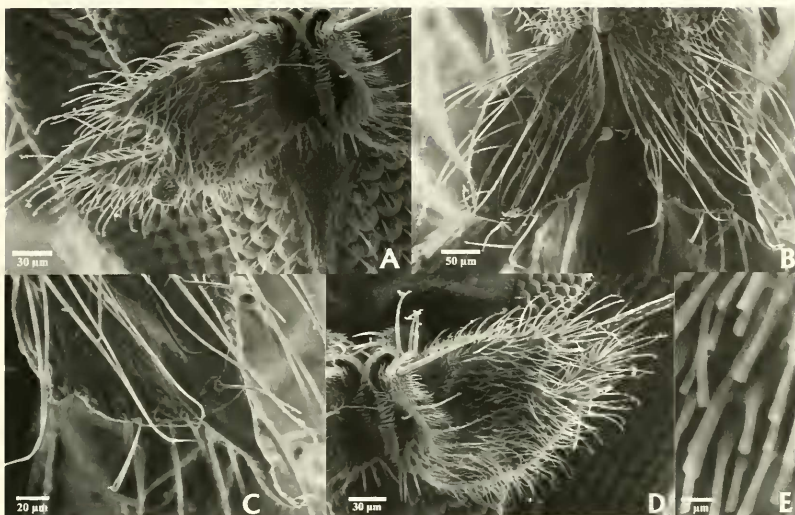


Fig. 2. *Xanthina flagellifera*. A, Inside view of first flagellomere of right antenna showing deep apical sinus. B, Palpi and labella showing flagelliform setae of palpi and acuminate tips of labella. C, Enlarged nearly glabrous distal half of one labellum showing acuminate tip. D, Inside view of first flagellomere of left antenna showing apical sinus. E, Enlarged minute setulae of palpus showing truncated tips.

Eyes nearly contiguous at lower $\frac{1}{3}$ of face, facial triangles brownish pollinose; front dark brownish, not or scarcely dulled. Palpus (Fig. 2B) brownish, triangular with oblique tip, with many long bristles having flagelliform tips, with many small peglike hairs; labella (Figs. 2B, C) pale yellow, very thin, nearly glabrous, with slender acuminate tip. Antenna yellowish, first flagellomere slightly darker at tips, oblong, apical notch to $\frac{1}{3}$ of length (Figs. 2A, D), lower lobe longer.

Thorax yellow; 6 or 7 pairs of acrostichals, 6 pairs of distinct dorsocentrals.

Legs yellow. Fore coxa with pale hairs anteriorly, with small black bristles along apical margin. Femora without distortions or unusual bristles. Tibia II with anterodorsals at $\frac{1}{6}$, $\frac{2}{5}$; posterodorsal at $\frac{1}{5}$, apicals 3; tibia III with anterodorsals at $\frac{1}{6}$, $\frac{1}{3}$, $\frac{2}{5}$, posterodorsals at $\frac{1}{5}$, $\frac{1}{2}$, $\frac{3}{4}$, ventral near $\frac{1}{2}$, $\frac{2}{5}$, ca. 4 erect ventral hairs in 2nd $\frac{1}{4}$, apicals 3.

Lengths of tibia and tarsomeres as follows: tibia I: 0.6 mm, tarsi: 0.38, 0.2, 0.16, 0.1, 0.1 mm; tibia II: 0.88 mm, tarsi: 0.36, 0.2, 0.16, 0.12, 0.12 mm; tibia III: 1.28 mm, tarsi: 0.5, 0.24, 0.22, 0.16, 0.12 mm.

Wings slightly fuscous, broken near base. Knob of haltere yellow.

Abdomen brown on tergites, yellow below. Tergites 1–5 exposed, with black bristles, longer near margins. Genital capsule mostly hidden by tergite 5, brown, cylindrical, with short black hairs; cercus whitish, thin, short, ovate, with black hairs.

Female.—Length ca. 3 mm; wings 2.8 mm long, ca. 1 mm wide.

First flagellomere ovate, not notched, arista subapical on outer surface. Palpus brownish-yellow, with black hairs; labella plain, without pointed tip.

Tibia II with anterodorsals at $\frac{1}{2}$, $\frac{2}{3}$, posterodorsal at $\frac{1}{3}$, apicals 3; tibia III antero-

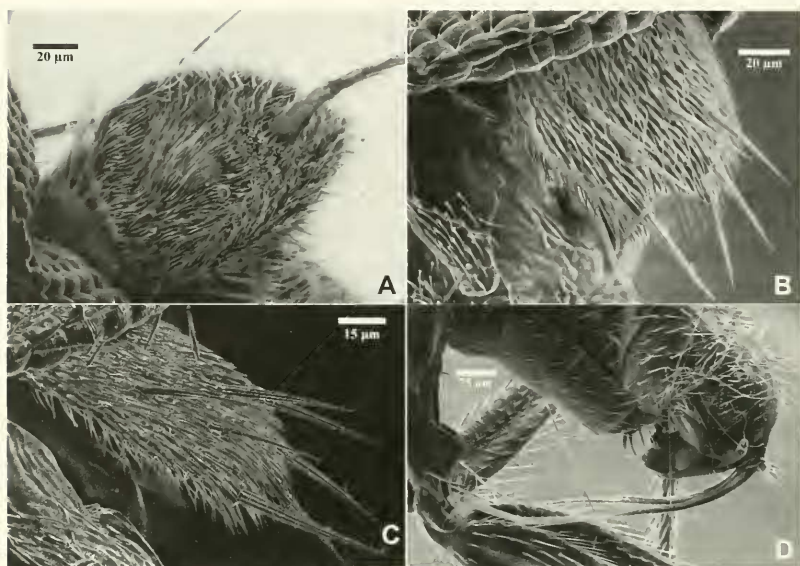


Fig. 3. *Xanthina schildi*. A, First flagellomere of antenna showing small apical sinus. B, C, Palpi showing two sizes of setae. D, Abdomen with genital capsule and cerci, showing comb of blunt setae of hind margin of 5th sternite.

dorsals at $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, posterodorsals at $\frac{1}{5}$, $\frac{3}{4}$, apicals 3.

Abdominal tergites more yellowish on sides.

Wing slightly fuscous; vein M scarcely bent at crossvein CuA; R_{4+5} curving back to become subparallel with vein M.

Holotype.—♂, Costa Rica: Cartago, La Suiza de Turrialba, Aug 1922?. Pablo Schild (USNM, from Melander Collection). Paratypes: ♀, Costa Rica: Higuito, San Mateo, s.d., 1922?, Schild (USNM); ♀, Cartago, Suiza de Turrialba, July 1922?, Schild (USNM).

Remarks.—*Xanthina flagellifera* shares with *X. squamifera* the genital capsule mostly enclosed in the 5th tergite, the short cerci, and the deeply notched first flagellomere of the antenna, and the two are evidently closely related. They also share unique forms of trichomes on their palpi. In

the present case (Fig. 2B) the trichomes are slender flagellate bristles whose ends reach to the margin of the labella. At the highest magnification the flagellate tips show minute appendages, a detail recalling the minute substructure of the scales in *X. squamifera*.

The identity of the females is based on similar chaetotaxy of the legs and the pale knobs of the halteres, but the females are somewhat larger with larger bristles on the tibiae. The females lack the pointed tips of the labella seen in the male.

Xanthina schildi H. Robinson,
new species
(Fig. 3)

Male.—Length ca. 1.5 mm; wing ca. 1.6 mm long, torn behind R_{4+5} . Setae mostly black. Eyes contiguous in lower $\frac{1}{3}$, facial triangles brown pollinose, lower triangle al-

most absent; front blackish, not dulled. Palpus (Figs. 3B, C) brownish, small, with black bristles and minute hairs; labella of proboscis brownish, small. Antenna yellowish, darker distally; first flagellomere ovate, subacute, with easily overlooked small apical notch bearing arista.

Thorax brownish above, yellowish on sides; 6 or 7 pairs of acrostichals, 6 pairs of distinct dorsocentrals.

Legs yellow. Fore coxa with mostly pale hairs, with 1 black bristle on distal margin. Fore and middle femora plain, hind femur with ventral row of more erect black bristles, longest near distal $\frac{1}{3}$ of femur, $\frac{1}{4}$ as long as width of femur. Tibia II with anterodorsals at $\frac{1}{5}$, $\frac{1}{2}$, no posterodorsals, apicals 3; tibia III with small anterodorsal at $\frac{1}{7}$, larger at $\frac{3}{7}$, $\frac{3}{4}$; posterodorsal near $\frac{1}{2}$; apicals 3. Lengths of tibiae and tarsomeres as follows: tibia I: 0.5 mm, tarsi: 0.3, 0.14, 0.08, 0.06, 0.06 mm; tibia II: 0.65 mm, tarsi: 0.28, 0.14, 0.1, 0.07, 0.08 mm; tibia III: 0.9 mm, tarsi: 0.15, 0.2, 0.14, 0.09, 0.09 mm.

Wing slightly fuscous, torn, missing behind R_{4-5} . Knob of haltere brown.

Abdomen with tergites brown, sternites yellow. Tergites 1–6 exposed, bristles dark with pale reflections. Genital capsule (Fig. 3D) pale brownish, facing a comb of stiff, curved, blunt bristles apparently borne on a preceding sternite; cercus as long as abdomen, filiform.

Female.—Unknown.

Holotype.—♂, Costa Rica: Cartago, La Suiza de Turrialba, July 1922?, Pablo Schild (USNM) from the Melander Collection.

Remarks.—*Xanthina schildi* is more like West Indian members of the genus, with six tergites exposed in the abdomen, a more exposed genital capsule, and long cerci. The first flagellomere of the antenna also looks more like the typical West Indian type that has no apical notch, but the present species does have a small notch (Fig. 3A). A comb of stiff sternal bristles facing the genital capsule, of the type seen in *X. schildi*, has thus far not been seen in any other member

of the genus. The cerci are the longest and narrowest thus far seen in the genus.

Xanthina turrialbae H. Robinson,
new species
(Figs. 4–5)

Male.—Length 2.3 mm; wing 2.65 by 1.0 mm. Setae mostly black.

Eyes nearly contiguous in lower $\frac{1}{2}$ to $\frac{1}{3}$ of face, facial triangles yellowish pollinose; front brown, scarcely dulled with pollen. Palpus (Fig. 4D) brownish, oval, with black bristles; labella with slender attenuate tips. Antenna with first flagellomere brownish yellow, oblong, slightly emarginate at tip (Figs. 4A, B); arista nearly twice as long as face, at lower magnification appearing glabrous throughout, thicker in basal $\frac{1}{2}$ with cover of minute hairs (Fig. 4C), becoming very slender distally with sparse minute fimbriae (Fig. 4E).

Thorax yellow; 6 or 7 pairs of acrostichals, 6 pairs of dorsocentrals.

Legs yellow. Fore coxa with black hairs anteriorly, with black setae along distal margin. Femora without distortions or unusual bristles. Tibia I with anterodorsal at $\frac{1}{3}$; tibia II broken; tibia III with bristles strong, anterodorsals at $\frac{1}{7}$, $\frac{1}{3}$, $\frac{3}{5}$; posterodorsals at ca. $\frac{1}{5}$, $\frac{1}{2}$, $\frac{3}{4}$, smaller ventrals at $\frac{1}{2}$, $\frac{3}{5}$; few erect posteroventral hairs in basal $\frac{1}{4}$ – $\frac{1}{3}$; apicals 3. Lengths of tibiae and tarsomeres as follows: tibia I: 0.83 mm; tarsi: 0.4, 0.23, 0.2, 0.13, 0.12 mm; tibia II and tarsi missing; tibia III: 1.57 mm; tarsi: 0.27, 0.37 mm, other tarsi broken.

Wing slightly fuscous; vein M scarcely bent at dm-cu, R_{4-5} bent distally and becoming subparallel with M, dm-cu as long as last of CuA_1 , CuA_1 fading before margin. Knob of haltere, brownish-yellow.

Abdomen brown on tergites, yellow on sternites; five tergites exposed, with marginal bristles long, black, others black with yellowish reflections. Genital capsule mostly hidden by tergite 5, brownish with small black hairs; cercus short.

Female.—Length ca. 2.7 mm; wing 3 by 1 mm.

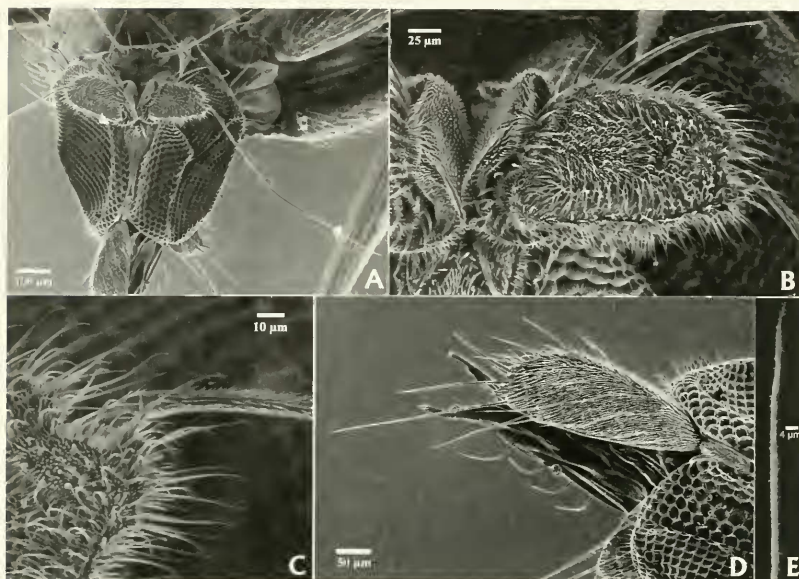


Fig. 4. *Xanthina turrialbae*, male. A. View of head showing antennae, face, and base of proboscis. B. First flagellomere of antennae. C. Tip of first flagellomere showing slight sinus and base of minutely haired arista. D. Proboscis with right palpus, part of laterally directed left palpus, and pointed tips of labella. E. Arista showing nearly hairless appearance.

Eyes contiguous. Palpus smaller but mostly as in male (Fig. 5A); labella pointed as in male. First flagellomere shorter than high, slightly emarginate at apex; arista about 1.5 times as long as face, hairy (Fig. 5B).

Tibia I with no dorsal; tibia II with anterodorsals at $\frac{1}{5}$, $\frac{1}{2}$; posterodorsal at $\frac{1}{5}$; tibia III with bristles large, anterodorsals at $\frac{1}{5}$, $\frac{1}{3}$, $\frac{1}{2}$; posterodorsals at $\frac{1}{6}$, $\frac{2}{5}$, $\frac{2}{3}$, apicals 3. Lengths of tibiae and tarsomeres as follows: tibia I: 0.77 mm; tarsi: 0.37, 0.23, 0.2, 0.13, 0.17 mm; tibia II: 1.1 mm; tarsi: 0.43, 0.27, 0.2, 0.15, 0.1 mm; tibia III: 1.57 mm; basitarsus: 0.27 mm, other tarsi broken.

Holotype.—♂. Costa Rica: Cartago, La Suiza, Apr 1922, Schild (USNM). Allotype ♀. Costa Rica: Cartago, La Suiza de Turrialba, Aug 1922, Schild (USNM). Both from the Melander Collection.

Remarks.—*Xanthina turrialbae* differs

generally by its large size, the larger bristles on its hind tibiae, and the black rather than pale hairs on the front surfaces of the fore coxae. Of more particular interest are the nearly bare aristae of the male antennae and the pointed labella of both the male and the female probosci. The species has the abdomen with only five visible abdominal tergites, the nearly hidden genital capsule, and the short cerci of the group of species including *X. squamifera* and *X. flagellifera*, but the first flagellomere of the antenna does not have the large apical notch and the palpi do not have strikingly distinctive setae or scales like those found in the two species described above.

Xanthina attenuata H. Robinson,
new species
(Fig. 6)

Male.—Length 1.8 mm; wings broken. Setae mostly black.

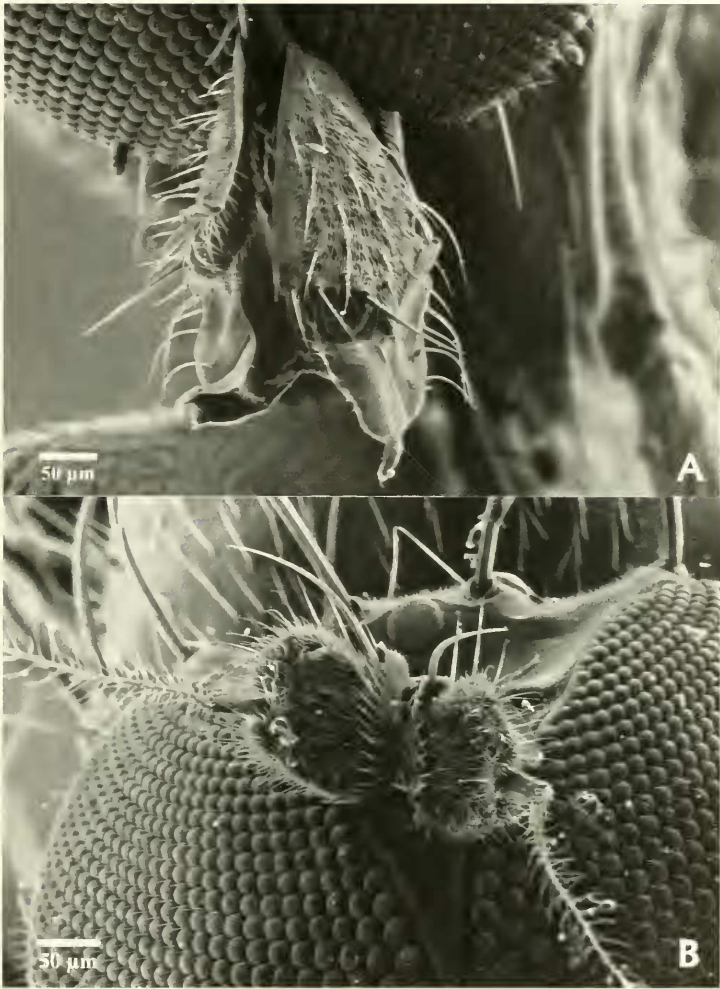


Fig. 5. *Xanthina turrialbae* female. A. Proboscis showing short palpi and pointed labella. B. Antennae showing reduced first flagellomeres with small apical sinuses and pubescent arista.

Eyes contiguous in lower $\frac{1}{3}$ of face; facial triangles mostly pale brownish pollinose; front blackish brown scarcely dulled with pale brownish pollen. Palpus very

thin, pale, broadly obdeltoid (Fig. 6B), with scattered pale hairs; labella broad, thin, pale, obtusely pointed with minute apiculus (Fig. 6B). Antenna mostly yellowish; first

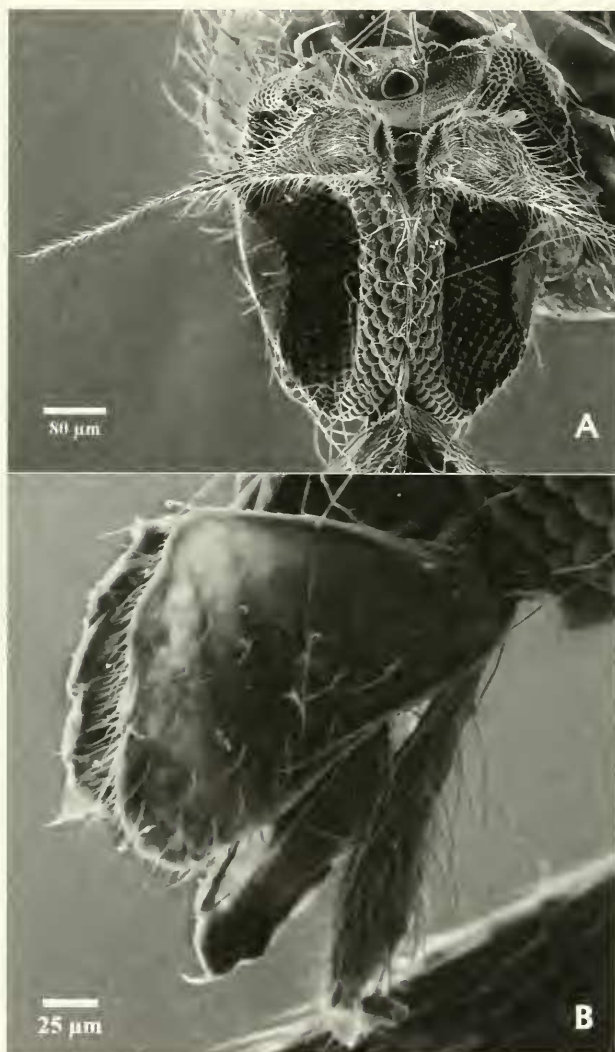


Fig. 6. *Xanthina attenuata*. A. View of head showing triangular first flagellomeres of antennae with single acuminate tips. B. Proboscis with face view of right palpus in center and edge view of left palpus to right, labella showing short-apiculate tips.

flagellomere darker distally, with obtuse angle above near basal $\frac{1}{3}$ (Fig. 6A), with long, slender, hairy, attenuate tip below; arista from distal $\frac{1}{3}$ of upper margin, slightly longer than first flagellomere, hairy.

Thorax yellow, 6 or 7 pairs of acrostichals, 6 pairs of dorsocentrals.

Legs yellow. Fore coxa with pale hairs anteriorly, with black bristles distally; femur I plain; femur II with row of erect, fine hairs ventrally, some as long as $\frac{1}{3}$ width of femur, small black apical on midanterior surface; hind femora missing. Tibia II with anterodorsals at $\frac{1}{6}$, $\frac{3}{5}$, small posterodorsal at $\frac{1}{5}$, 3 apicals. Lengths of tibiae and tarsomeres as follows: tibia I: 0.5 mm, tarsi: 0.33, 0.14, 0.1, 0.09, 0.063 mm; tibia II: 0.8 mm; basitarsus: 0.3 mm, other tarsi broken. Hind tibiae and tarsi missing.

Wings broken near base. Knob of haltere dark yellow.

Abdomen brown above on most tergites, yellow on most of 1st tergite, sides of most other tergites and on sternites. Tergites 1–6 showing, with black bristles, marginal bristles longer. Genital capsule mostly hidden, brownish; cercus appearing small.

Female.—Unknown.

Holotype.—♂, Costa Rica: Cartago, La

Suiza de Turrialba, Aug 1922?, Schild (USNM) from the Melander Collection.

Remarks.—*Xanthina attenuata* is distinct among the species with dorsally inserted aristae by the greater length versus width and more tenuous tip of the first flagellomere. Relationship may be closest to *X. dominicensis* H. Rob. of the Lesser Antilles because of the row of erect hairs or setae ventrally on the middle femur and the short form of the cerci. The palpi of the new species are very thin and totally lack any brownish or blackish setae.

ACKNOWLEDGMENTS

The Philips XL30 ESEM Scope was operated by Scott Whitaker, manager of the National Museum of Natural History SEM laboratory. Marjorie Knowles, Technician in Botany, is thanked for work with the specimens and illustrations.

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